*Journal of Automated Reasoning* **7** (1991)

# Contents to Volume 7

*Volume 7 No. 1 March 1991*

Publisher's Announcement v

DONALD W. LOVELAND / Near-Horn Prolog and Beyond 1

PETER PADAWITZ / Inductive Expansion: A Calculus for Verifying and Synthesizing Functional and Logic Programs 27

*Basic Research Problems:*

LARRY WOS / The Problem of Finding a Restriction Strategy More Effective than the Set of Support Strategy 105

*Problem Corner:*

MATT KAUFMANN / Generalization in the Presence of Free Variables: A Mechanically-Checked Correctness Proof for one Algorithm 109

*Book Reviews:*

Shang-Ching Chou: *Mechanical Geometry Theorem Proving* (RICK STEVENS) 159

Deepak Kapur and Joseph Mundy (Eds.): *Geometric Reasoning* (RICK STEVENS) 159

Guy E. Blelloch: *Vector Models for Data Parallel Computing* (RICK STEVENS) 160

M. E. Stickel (Ed.): *CADE-10 Proceedings, Lecture Notes in Artificial Intelligence Vol. 449* (RICK STEVENS) 160

*Errata*:

Timothy Stokes: 'Gröbner Bases in Exterior Algebra', *J. Automated Reasoning* **6**, 233–250 (1990) 163

Addresses of Editorial Board 165

*Volume 7 No. 2 June 1991*

*Special Issue on*

NEW TRENDS IN AUTOMATED REASONING

*Edited by*
VLADIMIR LIFSCHITZ and ALFREDO FERRO

ALFREDO FERRO / Introduction 169

WU WEN-TSUN / Mechanical Theorem Proving of Differential Geometries and Some of its Applications in Mechanics 171

D. CANTONE / Decision Procedures for Elementary Sublanguages of Set Theory: X. Multilevel Syllogistic Extended by the Singleton and Powerset Operators 193

D. CANTONE and J.T. SCHWARTZ / Decision Procedures for Elementary Sublanguages of Set Theory: XI. Multilevel Syllogistic Extended by Some Elementary Map Constructs 231

A. FERRO / Decision Procedures for Elementary Sublanguages of Set Theory: XII. Multilevel Syllogistic Extended with Singleton and Choice Operators 257

FRANCO PARLAMENTO and ALBERTO POLICRITI / Decision Procedures for Elementary Sublanguages of Set Theory: XIII. Model Graphs, Reflection and Decidability 271

*Basic Research Problems*:

PETER B. ANDREWS / More on the Problem of Finding a Mapping between Clause Representation and Natural-Deduction Representation 285

*Problem Corner*:

ART QUAIFE / Unsolved Problems in Elementary Number Theory 287

*Volume 7 No. 3 September 1991*

---

LARRY WOS / A Well-Kept Secret of History 301

ALAN BUNDY, FRANK VAN HARMELEN, JANE HESKETH, and ALAN SMAILL / Experiments with Proof Plans for Induction 303

ROLF SOCHER / Optimizing the Clausal Normal Form Transformation 325

DANNY DE SCHREYE, BERN MARTENS, GUNTHER SABLON, and MAURICE BRUYNOOGHE / Compiling Bottom-up and Mixed Derivations into Top-down Executable Logic Programs 337

ALLAN RAMSAY / Generating Relevant Models 359

WERNER NUTT / The Unification Hierarchy is Undecidable 369

TONG GAO TANG / Programming in Temporal-Nonmonotonic Reasoning 383

YISHAI A. FELDMAN and CHARLES RICH / Pattern-Directed Invocation with Changing Equations 403

*Basic Research Problems:*

LARRY WOS / The Problem of Choosing the Type of Subsumption to Use 435

INDEX FOR VOLUME 7

*Problem Corner:*
MATTHEW WILDING / Proving Matijasevich's Lemma with a Default Arithmetic Strategy 439

*Volume 7 No. 4 December 1991*

---

*Special Issue on*

AUTOMATED REASONING AND NONCLASSICAL LOGICS

*Edited by*
MICHAEL A. McROBBIE
*Institute of Advanced Studies, Australian National University*

MICHAEL A. McROBBIE / Automated Reasoning and Nonclassical Logics: Introduction 447

JOHN K. SLANEY / The Ackermann Constant Theorem: A Computer-Assisted Investigation 453

PAUL PRITCHARD / Algorithms for Finding Matrix Models of Propositional Calculi 475

LAURENT CATACH / TABLEAUX: A General Theorem Prover for Modal Logics 489

DOV M. GABBAY and FRANK KRIWACZEK / A Family of Goal Directed Theorem Provers Based on Conjunction and Implication: Part 1 511

DICK DE JONGH, LEX HENDRIKS, and GERARD R. RENARDEL DE LAVALETTE / Computations in Fragments of Intuitionistic Propositional Logic 537

A. W. BOLLEN / Relevant Logic Programming 563

GRIGORI MINTS and TANEL TAMMET / Condensed Detachment is Complete for Relevance Logic: A Computer-Aided Proof 587

ROBERT K. MEYER, MARTIN W. BUNDER, and LAWRENCE POWERS / Implementing the 'Fool's Model' of Combinatory Logic 597

*Basic Research Problems:*
LARRY WOS / The Problem of Choosing the Representation, Inference Rule, and Strategy 631

*Problem Corner:*
PAUL B. THISTLEWAITE and MICHAEL A. McROBBIE / Approaching Hard Non-Classical Problems 635

Author Index to Volume 7 639

Subject Index to Volume 7 641